



# **Behavioral, Cognitive, and Humanistic Theories: Which Theories Do Online Instructors Utilize?**

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## **ABSTRACT**

*This article presents fifteen different design theories from the behaviorism, cognitivism, and humanism schools of psychology. Information about the theories is presented as a response to three research questions. Descriptions and online learning empirical evidence of eight of the theories are illustrated first. Then, descriptions of seven additional design theories which have not yet been researched in connection with online learning are offered. Finally, results from a study that investigates how often online instructors utilize nine of the theories is presented. Conclusions are made in connection to the three research questions, and further research studies related to the topic are suggested.*

**Keywords:** *behavior theory; cognitive theory; course design; humanistic theory; online instructor; online learning*

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## **INTRODUCTION**

An increasing number of individuals have chosen distance education when taking a course or earning a degree because it is a flexible alternative that meets their needs (Chu & Hinton, 2001; Course-Management Systems, 2005). An online course is one type of distance education where an instructor and the students interact through an online venue, such as a course management system. When taking an online course, the course may occur at different times from different places, or it can occur at the same time from different places (Course-Management Systems, 2005; Simonson, Smaldino, Albright, & Zvacek, 2000).

There are advantages to taking an online course, and there are challenges that students and instructors must overcome. Synchronous and asynchronous discussion boards are features of a course management system that instructors make use of because these tools can be used to individualize instruction, encourage goal-based exploration, and guide students to construct new schemes of knowledge (Prester & Moller, 2001). Challenges that occur include feelings of isolation, waiting for responses to asynchronous posts, absence of impulsive discussion, and lack of non-verbal isolation (Figueroa & Huie, 2001; King, 2001; Northrup, Lee, & Burgess, 2002; Prester & Moller, 2001).

Designing effective courses is one way that instructors reduce the disadvantages (Collins & Berge, 1996; Makrakis, 1998; Prester & Moller, 2001; Williams, 2001). Instructors often use design theory to guide the development of courses so they can be more effective. Instructors may have problems in mind from past experiences with teaching online that they want to avoid, or they can recognize a problem as it is occurring and implement a strategy to help reduce the difficulty. Instructors may accept the idea of using theory to guide course design and solve problems, but they may have questions that they want answered. The purpose of this article is to answer three of the following questions that online instructors may have: (a) According to empirical evidence, what does the research show about online instructor use of different design theories? (b) According to lack of empirical evidence, which design theories have not been researched in regard to online instructor utilization of theory? and, (c) According to a recent study, how frequently do online instructors use nine of the design theories?

## REVIEW OF LITERATURE

There are three schools of psychology in which theories are categorized; behaviorism, cognitivism and humanism. It is believed that one school of theory is not better than the other, and individuals are encouraged to apply the theory that is the most appropriate for the student (Joyce, Weil, & Calhoun, 2000; Pinar, Reynolds, Slatery, & Taubman, 1996; Tomei, 2007).

### Behaviorism, Cognitivism, and Humanism

#### *Behaviorism*

Experimental psychologists William James and Edward L. Thorndike, questioned the use of memorization as a strategy for learning. Experiments showed that memory did not increase after the participants had memorized sets of information. These results guided a turn in research toward stimulus-response behavioral psychology. James and Thorndike believed

that the environment served as a stimulus, and it could be used to change the way individuals responded. As behaviorism became more established as a part of the school of psychology, psychologists began to focus on individual's responses to feedback when they performed a task. Other behavioral psychologists that have made contributions to the field of behavior psychology include Ivan Pavlov, B. F. Skinner, Albert Bandura, and Benjamin Bloom (Joyce et al., 2000; Pinar et al., 1996).

#### *Cognitivism*

Theories that are cognitive in nature are based on learning tasks that are practical, and they are seen being used in authentic learning environments. Cognitive theorists such as Jean Piaget, Lev Vygotsky, Erik Erikson, and David Ausubel have developed theories that are not only widely accepted, but they have begun the path for the development of other cognitive theories. When instructors utilize theories that are cognitive in nature, they tend to develop learning experiences that help students make connections that are meaningful to themselves (Grabinger, 2004; Tomei, 2007).

#### *Humanism*

Theories that focus on a student's affective needs come from the humanism school of psychology. These theories attend to students' feelings, emotions, values, and attitudes. Some of the earliest work that reflected humanism came from Colonel Parker, who encouraged child centered learning in a democratic school environment. His work later influenced the progressive work of John Dewey. Theorists such as Elliot W. Eisner, Ross Mooney, and Paul Klohr supported the development of learning experiences that focused on self value. Carl Rogers and Abraham Maslow wanted educators to concern themselves less with curriculum development and give more of their attention to understanding curriculum. The work of these psychologists eventually influenced the development of other theories based on Humanism. Collective common factors of theories rooted in Humanism include the attention toward

student-centered learning and individualism (Pinar et al., 1996).

## **ACCORDING TO EMPIRICAL RESEARCH: THEORIES SEEN BEING USED BY ONLINE INSTRUCTORS**

### **Theories of Behaviorism**

#### *Social-Cultural Model of Learning*

An online course that incorporates the social-cultural model of learning is reflective of behaviorism because patterns of communication are utilized. The social-cultural model of learning uses written and oral dialogue. Threaded asynchronous discussions, synchronous discussions and e-mail are examples of the tools implemented by instructors during the course design process. The pattern of behaviorism begins when the instructor poses a question, students respond to the question, and the instructor responds to the students' responses with positive or negative reinforcement comments.

In a study that explored Web-based online meetings, researchers found that learners wanted to interact with each other and their instructor through discussion. However, results showed that precautions need to be taken by the instructor to help promote effective discussion (Berge & Fjuk, 2006). Results from a four-year study on threaded discussions had outcomes that favored use of asynchronous discussions (Schwartzman, 2006).

In another study, researchers looked at the behavior of 96 individuals who participated in an asynchronous discussion. Results from a Myers-Briggs test were used to divide the participants into 24 groups based on personality type. There were eight introverted type groups, eight extroverted type groups, and there were eight mixed groups. Participants from the extroverted and mixed groups posted more asynchronous messages compared to the participants from the introverted groups. However, it was the participants from the mixed groups who showed a greater amount of metacognitive interaction.

Online instructors are encouraged to create mixed groups because instant feedback and new ideas presented by extroverted members may stimulate introverted members, and the in-depth discussion prompted by arguments from the introverted members could further stimulate the extroverted members to increase participation (Lee & Lee, 2006).

#### *Mastery Learning*

Mastery Learning is a practice originally created by John B. Carroll and Benjamin Bloom. John Carroll's perspective holds that a student's aptitude correlates with achievement. His view of aptitude considers how long it takes for the learner to learn the material as opposed to the learner's ability to master the material. According to this view, every learner can learn as long as the appropriate materials and instruction are provided. Benjamin Bloom's work focuses on organizing the curriculum so that students have the necessary time and ability to benefit from instruction. Now that modern instructional technology has afforded educators with new choices, curriculum developers are encouraged to develop comprehensive curriculum that includes self-administering multimedia units and programmed learning procedures (Joyce et al., 2000; Pinar et al., 1996).

In a study that explores the use of strategies to engage the whole learner, mastery learning is utilized as a strategy to promote significant learning. According to the researchers, an online course should be designed so that different parts of the course encourage deep learning. The syllabus should be detailed, comprehensive, and it should contain direct instruction about interaction. Objectives should be clearly presented so they form the course structure, and the assignments should directly relate to the objectives. Finally, they talk at length about asynchronous discussions and the use of different activities. They indicate that the most effective discussions that lead to deep learning are supported with facilitative directions and rubrics because the learners know what is expected. Interactive discussion activities, discussion tasks, and reflective and exploratory discussions are said to

be successful strategies that instructors can use to encourage mastery learning that is significant (Majeski & Stover, 2007).

### ***Simulations***

Learning from simulations through training and self-training is another example of a behavioral learning theory. When simulations are utilized, students take on the role of someone from a real life experience. To succeed when performing the role, students make use of concepts and skills to perform specific tasks. Instructors take the role of explaining, refereeing, coaching, and discussing the simulation experience with the students. They explain the rules, place the students into teams, and they assign roles based on student ability to ensure participation and communication between the students. When coaching, the instructor needs to be supportive, yet avoid interfering with the natural play of the simulation. Students are expected to make mistakes and adjust from those mistakes. Finally, instructors hold a discussion in which students have the opportunity to reflect and identify similarities and differences between the simulation and the real world (Joyce et al., 2000; Pinar et al., 1996).

Online role playing is not seen as a common practice in online courses. Data collected from a study on role playing that was part of an online course showed that students who participated enjoy taking part in the role plays, and they found that students considered the learning experience beneficial. Participants also indicated that the interaction made the classroom experience feel more personal. Students were seen making use of their knowledge to add to the role play experience (Lebaron & Miller, 2005).

## **Theories of Cognitivism**

### ***Theory of Multiple Representations***

Applying multiple representations that connect to content of subject matter is thought to be a valuable practice because students can build mental representations with the information and make information meaningful to themselves. Web environments and computer mediated

discussions are said to be conducive to the application of multiple representations during course design (Huang & Liaw, 2004). Researchers provide support and they raise cautions when it comes to using multiple representations during instruction. (Gfeller, Niess, & Lederman, 1999; Huang & Liaw, 2004; Moreno, 2002; Ying-Shao & Fu-Kwun, 2002).

A Web based lesson created to promote situated learning involved one hundred ten high school students from Taipei. Participants in the study were asked to connect a realistic situation with their own life. Social learning theory and multiple representations were used by the students to make connections. Results showed that when multiple representations were used along with situated learning during an asynchronous discussion that the students were able to cultivate and integrate the knowledge (Ying-Shao & Fu-Kwun, 2002). In another study on use of multiple representations, the researcher found that students with stronger technology skills were more successful when it came to using multiple representations. Since their technological skills were stronger, they had a lower amount of cognitive overload compared to students whose technology skills were not as strong (Moreno, 2002).

### ***Bruner's Three-Form Theory.***

Bruner (1990) states that there are three ways from which individuals see the world, through action, icons, and symbols. They use action to perform or demonstrate what it is they see about the world from their perspective. Icons or mental images are used to present a path, summary, or pattern. Symbolism, which is an abstract way of visualizing reality through the use of words and numbers, is the third form that individuals use. According to Bruner, these three forms of representation are founded on the theory that development must be effectively related to theories of knowledge and instruction.

Studies on the dual-coding theory show an influence on learning when visual and aural modalities are combined (Alty, 2002; Beacham, Elliot, Alty, & Al-Sharrah, 2002; Rieber, Tzeng, Trumble, & Chu, 1996). In a study conducted

by Rieber et al., (1996), 52 college students interacted with a computer simulation created partly with the dual-coding theory as a framework. Visual modalities were presented as animated graphics and numeric displays were presented as aural modalities. Results were better for students who were provided with the visual and aural support compared to the students who were provided with one of the two modalities.

### ***Moore's Theory of Transactional Distance***

Moore's Theory of Transactional Distance, unlike the Web-based theories already presented, is a distance theory. Many online instructors have applied this theory because its three dimensions have an affective influence on teaching procedures. Those three dimensions are referred to as interaction, course structure, and learner autonomy (Huang & Liaw, 2004).

Results from a study conducted by Huang (2002) showed that learners do not need to interact with other learners to develop a relationship with an instructor. The researcher found that course structure is easily implemented and adjusted in an online course, and it was found that the more technologically skilled an individual was, the better the individual was at working independently. Kanuka, Colett, & Caswell (2002) noted from a two-year study which observed 12 online university instructors that the instructors were more apprehensive about course structure, dialogue, and autonomy when they first began teaching online. Instructors who participated in the study needed to assess learners' autonomy, they needed to provide students with more feedback when the students did not have enough self-discipline to work independently, and they found that the learners wanted flexibility to be a part of the course structure.

## **Theories of Humanism**

### ***Theory of Immediacy and Social Presence***

A model of online learning that considers social presence during asynchronous discussion

to be a significant part of mediated discussion is presented. Theorists who hold that learning takes place through the interaction of three core components: cognitive presence, teaching presence, and social presence (Rourke, Anderson, Garrison, & Archer, 2001).

After a more in-depth look at social presence responses, three forms of social responses were identified and called affective responses, interactive responses, and cohesive responses (Martyn, 2004). These responses were used as indicators by Rourke et al., (2001) when analyzing content during their exploration of computer mediated discussions and affective behaviors among participants. It was found that learners' perceptions were an important factor that instructors kept in mind when designing online courses.

Additional important factors related to social presence were found in other studies. Gunawardena and Duphorne (2002) found in a study that focused on an academic computer conference environment that comfort with participating in discussions, easiness with interacting through text, and assurance with ones self significantly impacted perceptions. Murphy (2004) found that sharing, recognition of group presence, appreciative communication between learners, and the opportunity to express feelings and emotions to be indicators of social presence in an online discussion. It is Murphy's conjecture that learners must be able to contribute their own social presence before moving to higher levels of interaction.

### ***Cooperative Learning Theory***

Five facets of the basic elements of cooperative learning help others understand how to design learning experiences that utilize the cooperative learning theory. Positive interdependence takes place when students work together, and they perceive that they are moving toward the same goal. Direct interaction occurs when students discuss what they plan to do and how to go about it. Individual accountability encourages individuals to master learning while sharing and working with others. Attaining collaborative skills involves individuals working together



before they cooperate and learn. Finally, group processing takes place when the individuals in the group discuss and evaluate their work. Upon evaluation, the group members found that they work well together. Instructors who have applied this theory guide their students through each facet of the model. The more students develop, the better they work in a cooperative learning situation (Joyce et al., 2000).

A study that explored the online collaborative experiences and attitudes of twelve graduate students found, after assessing asynchronous posts, that poor communication, conflicts between members, and poor attitudes challenged the success of the online collaboration. Groups that did not have these challenges produced projects of higher quality. The researchers suggest implementing strategies to reduce the challenges so that chances for effective collaboration can increase (Thompson & Hing-Yu, 2006). Another study that investigated the impact of cooperative learning showed that cooperative learning did impact cognitive learning outcomes. Researchers found that learners become more involved with the online learning experience when they work cooperatively with others compared to when they worked independently (Riley & Anderson, 2006).

## **ACCORDING TO EMPIRICAL RESEARCH: THEORIES NOT SEEN BEING USED BY ONLINE INSTRUCTORS**

### **Theories of Behaviorism**

#### *Elaboration Theory*

Elaboration Theory, which is reflective of behaviorism, is a practice that is concerned with the organization of materials for a course. While cognitive aspects to this theory exist, it is also considered reflective of behaviorism because the instructor adjusts the learning environment to meet student needs. This theory holds that new learning should be presented first in the simplest form and carefully move to more complex forms

of content and learning. For this reason, online instructors tend to begin with knowledge that students are already familiar with. Then, they transition to the exploration of new knowledge which helps students make the appropriate connections to help them understand the content (Huang & Liaw, 2004; Ludwig, 2000).

#### *Direct Instruction*

Direct instruction is referred to by behaviorists as "modeling with reinforced guided performance." The focus of this model of learning involves dividing performance into goals and tasks, breaking the tasks into smaller tasks, creating training activities that directly target the objectives and ensure mastery of each task, and the inclusion of prerequisites that students have to achieve before they can go on to more advanced concepts. Critics of the direct instruction theory note that the application of this theory should be used with caution because it is not appropriate for all educational objectives and all students (Joyce et al., 2000). A study that focused solely on the use of direct instruction was not available in the literature, however there is information that suggests using direct instruction as part of an online course when presenting specific directions to students and when providing information needed to participate (Bellefeuille, 2006).

### **Theories of Cognitivism**

#### *Cognitive Flexibility Theory*

Jonassen (2003) explains that a great deal of research looks at the presentation of problems to learners and identifies two conflicts with how problems that need to be solved are presented. First, it is a conflict when the problems are presented as structured problems because real life problems are ill-structured. The other conflict is that students do not transfer problem solving skills very well. Jonassen suggests using the cognitive flexibility theory to prohibit the conflicts.

Active learning, through discussion and the exchange of ideas, is an important aspect of learning (McAlpine & Ashcroft, 2002).

For effective distance learning to take place, constructivism and cognitive flexibility need to be present. Learners should be active participants and instructors can not be distributors of information since students process information differently. According to the researchers, students should solve problems in ways that are best for themselves (Notar, Wilson, & Montgomery, 2005).

### ***Gagne's Conditions of Learning***

Huang and Liaw (2004) identify Gagne's conditions of learning as an instructional learning process that is methodical and logical. Gagne's conditions of learning is a descriptive theory of knowledge that contains five separate categories of outcomes labeled as intellectual skills, verbal information, cognitive strategies, motor skills, and attitudes. Having the ability and knowledge to categorize and use materials are characteristics of intellectual skills. Abilities that allow individuals to show "what" something is or means are verbal information abilities. Cognitive strategies have to do with the learning skills individuals own. Simple and complex movements make up an individual's motor skills, and attitudes are the feelings that we develop as a result of interactions that are either constructive or unconstructive. Researchers note that Gagne's work has grown into a system of nine practices: gaining attention, informing learners of the objective at hand, stimulating recall of prior learning, presenting the content, providing learning guidance, eliciting performance, providing feedback, assessing performance, and finally, enhancing retention and transfer (Gagne, 1985; Gagne, Wager, Golas, & Keller, 2005; Molenda, 2002; Smith & Ragan, 1996).

### **Merrill's Instructional Transaction Theory**

This theory holds that learners can be motivated by processes of transactions that help them make connections. This theory has a set of conventions to which objects of knowledge are selected and sequenced (Huang & Liaw, 2004). Identifying relationships between educational and technical factors are possible with the instructional

transaction theory. The instructional transaction theory consists of two facets: schemes of knowledge and procedures for applying the knowledge. Merrill's position states that for learning to take place, the learner needs to have more than one knowledge structure illustrated for anything to make sense. According to the researchers, instructional transaction theory learning consists of the object that is to be learned or the content that is to be taught. It is possible to combine the different facets of content that need to be taught and group them into one structure of knowledge. Individuals have internal representations of knowledge and structures of knowledge are external. The theory utilizes transactions as a way to categorize the content that is to be taught (Buendia et al., 2002).

It is believed that there are three data types used when a transaction of knowledge takes place. There is a knowledge base, a resource base, and there are instructional boundaries. These three facets of instructional transaction are then subdivided into more descriptive categories. A knowledge base is, for example, divided by entities, activities, and processes. Resource databases, among other possibilities, are subdivided by mediated representations of the knowledge field, presentation techniques, and communication techniques. Instructional boundaries, of which vary by situation, can be divided according to population, learning task, and the environmental situations. So, when an online instructor applies the instructional transaction theory to course design, empirical research is used to help set the categories in a knowledge base, build resource database classes, and define the parameters that are used to set the boundaries (Zwart, 1992).

### **Theories of Humanism**

#### ***Phenomenal Field Theory***

A humanistic theorist named Arthur Combs presented his phenomenal field theory with psychologist Donald Snygg. According to this theory, to understand human behavior, the time must be taken to consider the point of view of

another. They believed that if one wanted to change another person's behavior, they must first modify his or her beliefs or perception. One had to "walk in their shoes" if they wanted to understand and guide change. By taking this line of thinking, educators had to recognize that the learner needed to find meaning and understand the learning as opposed to learning and understanding the strategies (Boeree, 2007; Tomei, 2007).

Combs and Snygg felt that if they were to understand and foresee the behavior of another that they had to reach into the person's phenomenal field. Since it was impossible for them to physically look into another person's mind, they had to make inferences from what was observed. When educators utilize this theory, they cannot choose a topic of instruction, implement a strategy, and expect every child to be motivated by what has been placed before them because the information does not connect to their own lives. Instead, the educators have to get to know the learner's phenomenal self and create learning experiences that have meaning to the learner. Once instructors take this path, the student that was not motivated to learn at one time will become connected to the learning experience (Boeree, 2007; Tomei, 2007).

### *Self-Actualization Theory*

Maslow believed that strong beliefs about one's self are connected to the thought of self-actualization. According to his thinking, individuals with strong self-actualization interacted well with others, and they found ways to develop and contribute to the world around them fairly easily. Those who did not have strong self-actualization choose to live within their environment and accept what comes their way instead of reaching into their environment and making new opportunities happen for themselves (Joyce et al., 2000; Pinar et al., 1996; Tomei, 2007).

For a person to reach the level of self-actualization, he or she has to be fulfilled at each level of what Maslow referred to as the hierarchy of needs. The first level is the biological level. At this level, an individual's need for food and shelter must be met before the individual can

move to another level. At the next level, the individual has to feel secure. Level three of the hierarchy of needs demands that the individual feel as though he or she belongs and is loved. Needs for self respect, achievement, attention, and recognition must be fulfilled if an individual is to move past the esteem level of the hierarchy. When an individual has past each of those levels, he or she has reached the final level, the level of self-actualization. At this point, the individual's ability to reach potential can take place. While each level has to be fulfilled, they do not have to stand alone and one behavior can satisfy more than one level on the hierarchy. Instructors who utilize this theory when designing and conducting a course look to see if their students needs have been met to help them understand student behavior (Joyce et al., 2000; Pinar et al., 1996; Tomei, 2007).

## **FREQUENCY OF DESIGN THEORIES UTILIZED BY ONLINE INSTRUCTORS**

In a recent study, online instructors were asked how often they utilized nine design theories when creating an online course. Questions about the design theories were presented as part of a larger study on online instructor support for the practice of telementoring (Cicciarelli, 2006).

### **Methodology**

During the quantitative exploratory study, based on descriptive research design, 2000 online instructors were sent a link to an anonymous contingency survey. Nine of the survey questions asked the online instructors how often, according to a Likert scale, they utilized each theory when designing an online course. Once 323 responses to the survey had been submitted, access to the survey was turned off and the data was collected for analysis. A univariate, descriptive level analysis of frequency distributions was run for each variable. Bivariate relationships between the independent and dependent variables were examined using Spearman Rho tests, and cross-tabulations were calculated to provide a deeper look at the data.



## Results According to Theory

### *Theory of Multiple Representations*

Spearman rank order of coefficient of correlation (Spearman rho) was computed to measure the strength between the two variables. Results showed that the correlation at a .01 level was significant for a two-tailed test ( $r = .113$ ,  $p = .045$ ). According to cross-tabulation results, 32.6 percent of the online instructors said that they always utilize the theory of multiple representations, 32.9 percent indicated that they used the theory more often than occasionally, and 20.8 percent indicated occasional use. There were 7.3 percent who said they utilized the theory less often than occasionally, and 6.4 percent said they never made use of the theory of multiple representations.

### *Theory of Immediacy and Social Presence*

Spearman rho results for a .01 level two-tailed test that correlated online instructor use of the theory of immediacy and social presence were significant ( $r = .187$ ,  $p = .001$ ). Cross-tabulation results showed that 36.8 percent always use the theory of immediacy and social presence, 36.1 percent utilize it more often than occasionally, and 15.2 percent use it occasionally. There were 8.1 percent who said they utilize the theory less often than occasionally and 3.9 percent said they never utilize the theory of immediacy and social presence when designing an online course.

### *Elaboration Theory*

Results from a .05 level two-tailed Spearman rho test that correlated online instructor use of the elaboration theory was significant ( $r = .146$ ,  $p = .010$ ). Cross-tabulation results showed that 31.5 percent of the online instructors always use the elaboration theory, 41.2 percent said that they use the theory more often than occasionally, and 16.2 percent indicated that they use it occasionally. There were 6.8 percent who said that they utilize the theory less often than occasionally and 4.2 percent who said that they never use the elaboration theory when designing an online course.

### *Dual-Coding Theory*

Spearman rho results for a two-tailed test that correlated online instructor use of the dual-coding theory was not significant ( $r = .076$ ,  $p = .179$ ). Cross-tabulation results showed that 23.5 percent always utilize the dual-coding theory when designing an online course, 23.5 percent more often than occasionally use the theory, and 18.3 percent occasionally utilize the theory. There were 17.7 percent who said that they utilize the theory less often than occasionally and 17.0 percent said that they never use the dual-coding theory when designing an online course.

### *Moore's Theory of Transactional Distance*

Results from a .01 level two-tailed Spearman rho test that correlated online instructor use of Moore's theory of transactional distance was significant ( $r = .233$ ,  $p = .000$ ). Cross-tabulation results showed that 39.5 percent always utilize Moore's theory of transactional distance when designing an online course, 37.5 percent use the theory more often than occasionally, and 14.9 percent indicated that they utilize the theory occasionally. There were 5.5 percent who said that they utilize the theory less often than occasionally and 2.6 percent said that they never utilize Moore's theory of transactional distance when they design an online course.

### *Merrill's Instructional Theory*

Spearman rho results for a .01 level two-tailed test that correlated online instructor use of Merrill's instructional theory was significant ( $r = .181$ ,  $p = .002$ ). Cross-tabulation results showed that 22.4 percent of the online instructors said that they always utilize Merrill's instructional theory when designing an online course, 39.3 percent indicated that they utilize the theory more often than occasionally, and 21.8 percent said that they utilize it occasionally. There were 8.6 percent who said that they utilize the theory less often than occasionally and 7.9 percent said that they never utilize Merrill's instructional theory when designing an online course.

### ***Gagne's Conditions of Learning***

Results from a .01 two-tailed test that correlated online instructor use of Gagne's conditions of learning was significant ( $r = .257, p = .000$ ). Cross-tabulation results showed that 28.9 percent of the online instructors indicated that they always utilize Gagne's conditions of learning when designing an online course, 42.8 percent said that they utilize the theory more often than occasionally, and 13.8 percent said that they occasionally utilize the theory. There were 9.0 percent who indicated that they utilize the theory less often than occasionally and 5.5 percent said that they never utilize Gagne's conditions of learning when designing an online course.

### ***Cognitive Flexibility Theory***

Spearman rho results for a .01 level two-tailed test that correlated online instructor use of the cognitive flexibility theory was significant ( $r = .226, p = .000$ ). Cross-tabulation results showed that 30.1 percent of the online instructors indicated that they always utilize the theory when they design an online course, 36.9 percent said that they utilize the theory more often than occasionally, and 22.4 percent said that they occasionally use the theory. There were 5.4 percent who indicated that they utilize the theory less often than occasionally and 5.1 percent said that they never utilize the cognitive flexibility theory when designing an online course.

### ***Bruner's Three Form Theory***

Results from a .01 level two-tailed test that correlated online instructor use of Bruner's three form theory was significant ( $r = .169, p = .003$ ). Cross-tabulation results showed that 14.6 percent of the online instructors indicated that they always utilize Bruner's theory when designing an online course, 27.3 percent said that they utilize the theory more often than occasionally, and 26.0 percent said that they utilize the theory occasionally. There were 17.9 percent who said that they utilize the theory less often than occasionally and 14.3 percent who said that they never utilize Bruner's theory when designing an online course.

## **CONCLUSION**

Information presented in this article focused on answering three questions that individuals interested in use of design theory may have in connection with creating an online course. The first question asked, "According to empirical evidence, what does the research show about online instructor use of different design theories?" The evidence showed that there is empirical evidence available on eight of the 15 theories presented in this article. Researchers found positive experiences and made suggestions for online instructors to follow when utilizing these theories. According to what has been presented, it would be an effective choice to frame course development with the different theories based on the course and the needs of the students.

The second question presented asked, "According to the lack of empirical evidence, which design theories have not been researched in regard to online instructor utilization of theory?" Considering that evidence on the use of these seven theories has not already been published in the literature, a signal has been made for the need for research. It would be beneficial to the field if online instructors decided to present how they utilize these theories as part of their online course, and it would be even better if researchers conducted studies that explored the use of these design theories.

Finally, the third question asked, "According to a recent study, how frequently do online instructors use nine of the design theories?" Of the nine theories presented, there were significant findings for all but one theory. This indicates that online instructors are making use of theory to support course design and it points to which theories they tend to use and how often. Other online instructors may find this helpful when they question the use of the different theories. Further research on this topic should investigate to find a description of the online instructors who indicated how often they utilized nine of the different theories when designing an online course. Researchers could also conduct a study that asked online instructors to provide a qualitative explanation of how they use design

theory when creating a course. This would be a favorable way for instructors to share their work so that others could learn and possibly develop other unique ways to make use of the theories for the purpose of creating effective online courses.

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An abridged list of references follows. For a complete unabridged Reference page, please visit: [http://academics.rmu.edu/~tomei/01\\_Ciccarelli\\_References.htm](http://academics.rmu.edu/~tomei/01_Ciccarelli_References.htm).

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